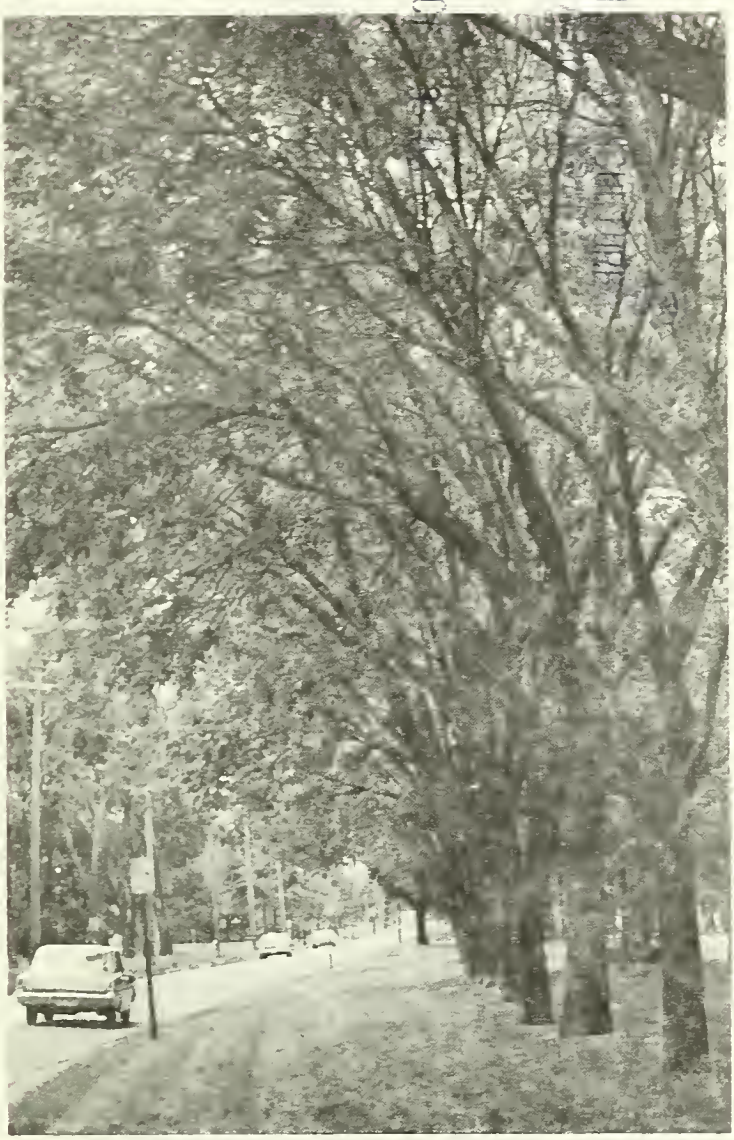
for City Trees



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TLC* for City Trees

1. Trees in cities need *Tender Loving Care to stay healthy and beautiful.

2. Urban trees have special problems that their country cousins do not, such as....

3. poor soils, severe wounding,

4. pressure from concrete,

5. excessive soil fill,

6. and severed branches. The list goes on and on.

7. We could fill an entire program with horror stories, but our purpose is to offer basic information on proper tree care. More detailed information is available in brochures and research reports from the U.S. Forest Service.

8. Cavities in trees start with wounds and dead branches or leaders. A cavity's diameter will be the same as that of the tree when it was wounded or when the branch or leader died. The leader on this birch tree died when the tree was the diameter of the cavity.

9. From another view you can see the dead leader beside the sound new leader. When filling cavities, do not injure the callus or break the band of hard wood around the decayed area.

10. Cavities often fill with water. Do not drill holes to drain the water or decay will spread into the surrounding wood.

11. This old cavity was cleaned so thoroughly that the hard rim of wood between decayed and sound tissue was broken.

12. Either leave cavities open or fill them safely with nonabrasive materials. To prepare a cavity for filling or screening, take only the wood that is easy to remove; preserve the hard, protective rim.

13. Use metal tubes to drain wetwood fluids. This keeps wetwood fluids from spreading over the bark.

14. Wounds spell trouble for trees. Do everything you can to prevent them. Trees are able, however, to wall off wounds.

15. Wounds sometimes start as vertical cracks.

16. Cracks can also develop from branch stubs,

17. splitting up....

18. or down.

19. Other causes of cracks, especially on young or thin-barked trees, include holes for injections and implants.

20. These large protruding splits are called frost cracks, a misnomer, since they begin with a wound, not frost.

21. This oak was severely wounded when it was small. A crack later formed over the callus closure. Lawn mowers cause many injuries that later become cracks. Injured roots or roots killed during planting may also lead to cracks five or even 10 years later.

22. Cracks also start above flush-cut branches. One has started here at the pencil point on this maple which was flush-cut two years ago.

23. Never flush-cut living, dying, or dead branches.

24. This is the right way to cut a large living branch.

25. Every branch has a thick bark ridge separating it from the main stem. Never cut behind the branch bark ridge. Never leave a stub, as shown here. Always cut as close as possible to the outer edge of the branch bark ridge, as indicated by the red line.

26. The inner side of the sample shows the hard inner wood of the branch bark ridge. If you cut behind the ridge at the arrow you'll injure the main stem. Cut the branch, not the trunk, by following the red line.

27. You can easily locate the branch bark ridge on most trees,

28. especially on small branches.

29. Here is a proper cut on a small oak branch.

30. Callus will ring proper cuts like the one on this apple tree,

31. and on this small birch, shown six months after pruning.

32. As branches wane and die, they are invaded by beneficial decay-causing fungi. These organisms spread to the base of the branch and branch collar, but rarely go beyond this point.

33. The basal portion of a dead, decayed branch often grows rapidly and forms a callus ring.

34. According to nature's design, the branch is then shed.

35. This section of a naturally shed cherry branch shows the perennial small pocket of decay within the branch collar. The red arrows indicate a protective zone formed by the tree as the branch began to die 11 years ago when the tree had eight rings of sapwood.

36. On the other side of the same sample, you can see where the dead branch was flush-cut. The red arrow marks the limit of the cut, while the actual limit extended to the green arrow due to cambial dieback. Discolored sapwood spread to the purple arrows as a result of the cut.

37. Cut dead branches as shown here. Do not injure or remove the callus ring....

38. or you will later see an obvious early warning sign of decay—a dead spot at the base of the cut.

39. Decay spreads rapidly from dead spots. No amount or type of wound dressing will help.

40. The size of the callus is not related to the decay process but depends on how rapidly the tree grows after pruning. All too often, big callus rings belie the presence of decayed wood or hollows inside.

41. These sections came from a maple tree that was wounded experimentally. A wide variety of decay resulted, but all wounds showed the same type of thick callus ring. Again, callus is associated with the growth rate of the tree, not with the decay process.

42. Fluids oozing from almost-closed wounds indicate internal problems. This English oak is 4 feet in diameter. The callus collar is very large, as is the internal column of decayed wood.

43. When removing a leader, slant the cut gently as shown on the left; a flat cut invites rapid decay development.

44. On the other hand, a severely slanted cut also encourages the spread of decay upward and downward.

45. You may not be able to convince everyone of the merits of proper pruning. Many people learn too late.

46. Pruning can also help to prevent other tree problems, such as cankers, that start on dying branches.

47. Prune basal sprouts as soon as you identify the desired dominant stems. Choose those that grow lowest on the old stump. Don't worry that decay may spread from a cut sprout or into a growing dominant sprout; it won't happen.

48. Applying dressings to improper cuts, such as the one on this mountain ash, is primarily cosmetic. Research shows that commonly used wound dressings do not stop decay.

49. Fruit bodies of fungi often burst through wound dressings. This is a sure sign of decay, which can be stimulated by too much dressing.

50. This same tree had been cut in many places. Harsh flush-cuts and heavy coats of dressing will indeed cause the tree, as well as the people and property around it, some real problems.

51. We conducted research on wound dressings on hundreds of trees. After dissecting them, we found no difference between treated and control trees. These samples from the same white oak show no difference in callus formation.

52. On these red maple samples, cambial dieback is consistent on all wounds, whether treated or control.

53. We found many decay-causing fungi in tissue taken from treated and control wounds. If a client insists on using wound dressing, apply a very thin coat, but only after you've completed all the other procedures for maintaining a healthy tree.

54. Holes are wounds, too.

55. Drill holes have been the subject of experiments on decay for more than 20 years. Abundant information is available on this type of wound.

56. When healthy wood is wounded, the tree walls off the injured areas.

57. When new wounds are added to wood that is already discolored and decayed from older injuries, much larger columns of infected wood will result.

58. These two maples received similar wounds at the same time. The one on the left shows little injury, but the one on the right sustained considerable damage.

59. Trees can wall off wounds effectively, but as damage accumulates over time, internal columns of infected wood begin to merge. This happens even with small wounds,

60. and with wounds inflicted in the tough root flair area.

61. When injecting or implanting substances keep the wound as small and shallow as possible. Treatments can be beneficial when properly applied.

62. Wounds close rapidly on fast-growing trees. Try not to make new wounds every year, or inflict them directly above or below older wounds.

63. Don't use high doses of chemicals. Small openings can cause large problems when phytotoxic chemicals are used.

64. Never make deep wounds or apply high pressure,

65. or you may cause severe internal injuries. Cambial dieback,

66. or cankered areas may keep the wounds from closing.

67. Follow the same careful procedure with implants.

68. When implants are first inserted, they cause very little damage to healthy trees. The story changes, however, as the injury is repeated year after year.

69. Notice how dieback spread only slightly above and below this experimental wound. When scribing or tracing wounds, be sure to cut smooth, shallow, and rounded margins. You don't need to stay with one particular shape, like an elongated ellipse.

70. Cables and braces can be beneficial if properly used. Do not anchor hardware in decayed wood, which fell away after the sample was cut. Only new wood that formed around the hardware remained sound.

71. The same thing happened here. Sound new wood formed around the rod. Try to keep the tree healthy after bracing.

72. Don't use sharp-edged washers; they cut into the tree and obstruct closure.

73. Avoid cable angles that will cause screws to move, thus inhibiting firm closure.

74. Examine trees for indicators of internal problems when they are positioned where they could fall and damage property or injure people.

75. Some hazards are obvious.

76. Other trees look safe, but have a weak root system. Always check for root decay when making a hazard tree inspection.

77. Fungus fruit bodies on old branch cuts are reliable indicators of internal decay.

78. You can also use electrical methods to detect decay and determine the relative vitality of trees.

79. Many tree problems are still poorly understood. But on the positive side, we've learned a great deal about keeping trees healthy, safe, and beautiful.

80. We made the choice to plant trees in our backyards and cities. Now it's our responsibility to care for them.

This program has been presented by the Forest Service, United States Department of Agriculture.